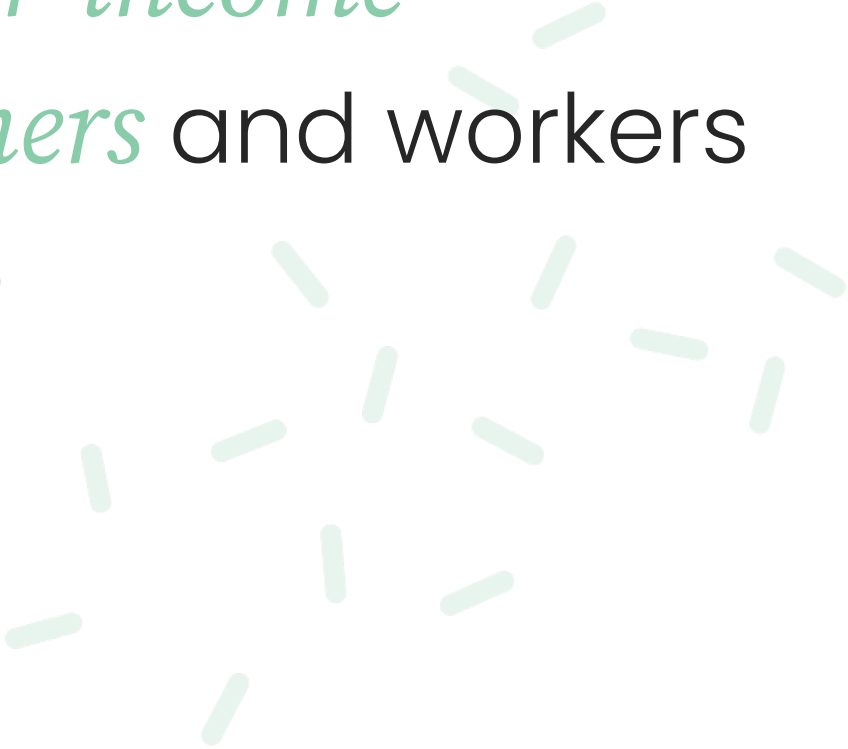


Digital products tailored
to *lower-income*
consumers and workers
will rise



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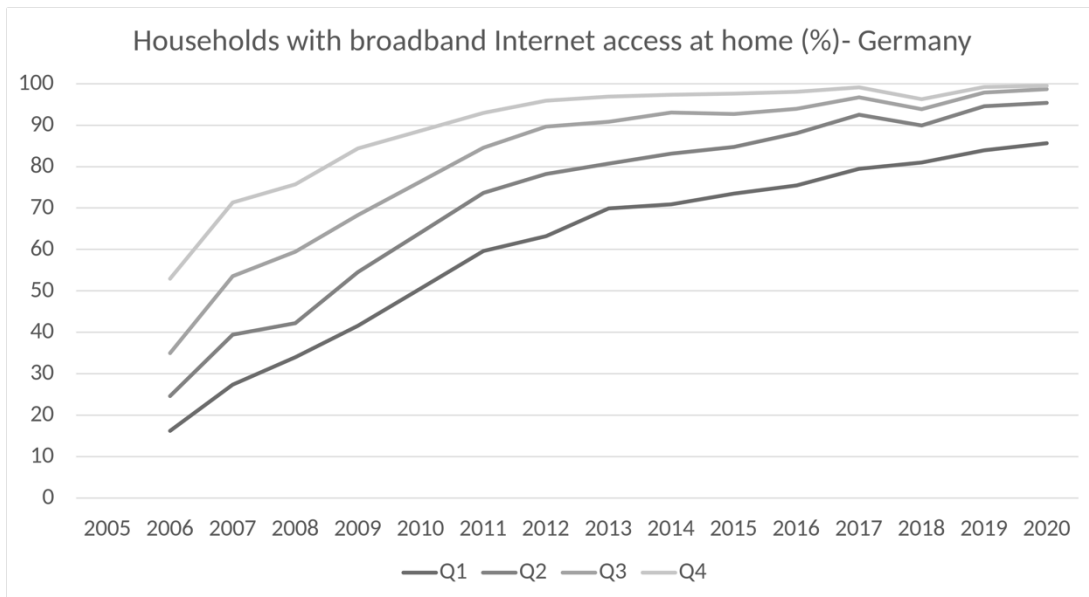
The Cusp

It's 2009 – for lower-income consumers online

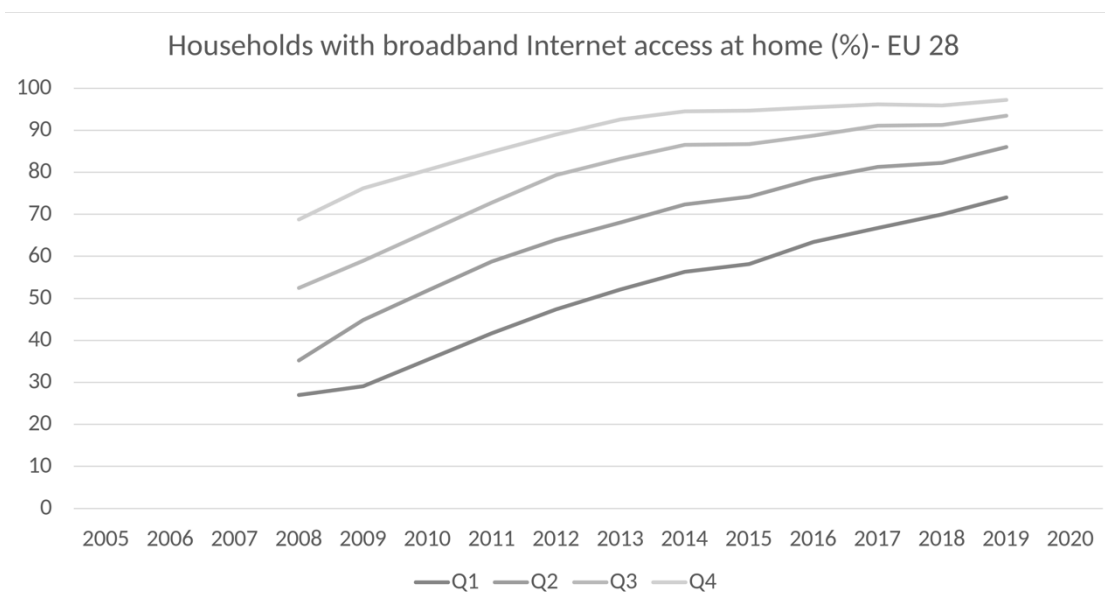
Today, broadband Internet access at home is as widespread for lower-income consumers as it was for higher-income consumers more than 10 years ago. Lower-income individuals use the Internet ca. 30% less and purchase nearly 40% less online than their higher-income peers. For lower-income consumers online, a golden decade lies ahead.

Our current techno-economic paradigm based on microprocessors and the Internet is spreading from the core to the periphery (Perez 2003). It has captured the low-hanging fruit of higher-income consumers in high-income countries. Now it is working its way down the income pyramid. Admittedly, both powerful processing and the internet have been around for decades. But during their march to primacy they first focused on serving higher-income consumers. The affluent are a low-hanging fruit; their willingness to pay and experiment is high and so is their customer lifetime value. High margins allow room for sell-side experiments and higher customer acquisition costs. So online and digital offerings were built for them – not lower-income consumers.

Online, lower-income consumers are a decade behind their higher-income peers. Today's (2019 / 2020) share of first-income-quartile households with broadband Internet access is on the level fourth-income-quartile households were in 2009 – both in Germany and the European Union.

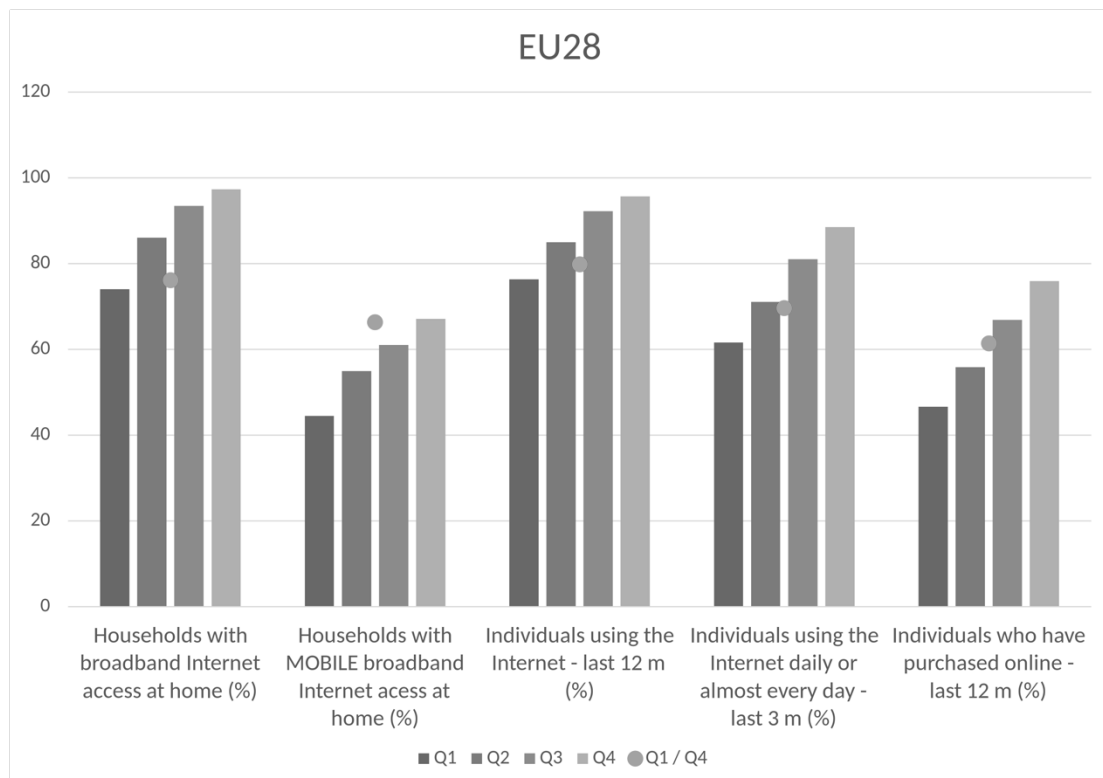


Source: [OECD ICT Access and Usage by Households and Individuals](#). Households with income in first (Q1), second (Q2), third (Q3) and fourth (Q4) quartile.



Source and details see above.

The gap is even wider in mobile broadband Internet access at home (see the dots in the figure below). And lower-income individuals use the Internet ca. 30% less and purchase there almost 40% less than their higher-income counterparts do.



Source and details see above. Q1 / Q4 divides the percentage of households with income in the first quartile by the percentage of households in the fourth quartile.

For lower-income consumers it's 2009 online. A golden decade lies ahead — of entrepreneurs serving lower-income consumers by playing to the inherent advantages of software.

Software will be the perfect world *for lower-income consumers*

Software's cost features have the power to serve lower-income consumers with a truly profitable low-margin-high-volume strategy, better unbundling / incrementalizing and more potent price discrimination.

- Software's marginal cost is zero. Thus, software can be distributed at sufficient scale to make the low-margin pricing tailored to lower-income consumers highly profitable.

Valuable businesses must have the potential to be profitable one day. And the more profitable the better. Profitability is a function of margin and sales. Given the high price sensitivity of lower-income consumers, the first of the two has a very constrained upside. So it is volume of sales driving profitability. In the software world, the scale of this distribution is

theoretically unlimited. As dematerialization advances — and ever less hardware & electricity becomes necessary per bit — the marginal cost of software is approaching zero.

- Software is a cheap alternative. As it is becoming smarter it is replacing costly humans for ever more inputs, tasks and skills.

Everything has inputs, and the assembly of inputs is but another input. Inputs become cheaper if their inputs also drop in price, or if the purchaser possesses bigger market power. Market power is a tool of incumbents, so inputs of inputs of inputs (ad absurdum) are more promising for startups. And inputs are cheapening exponentially; as technological change accelerates costly human input becomes less necessary for more and more complex tasks.

A prominent case study of a cheaper-input model is Scalable Capital, a company our team invested in. Admittedly, the company's \$10k depot minimum for its robo wealth-management does not address the very lowest of incomes. Nevertheless, the success factor is the same: \$10k is 0.1% of the \$10m a customer must bring to Goldman Sachs for the bank to manage her wealth. Scalable manages to open professional wealth management to additional income classes by reducing the costs of its inputs. Instead of employing costly portfolio managers and private bankers, it invests fully-automatically via its own proprietary algorithm.

- Dematerialized software means zero fixed costs and allows for unbundling and incrementalizing, which again drive down costs and prices.

Many products and services enjoyed by higher-income consumers come with the heft of auxiliary features. A high-end hairdresser will co-function as a day spa, whose hair-washing chairs massage their first puzzled, later relaxed customers. Cars may second as space ships in which cinematic entertainment takes a front seat. Naturally, both are costly upgrades; their removal leaves key features — haircuts and transportation — untouched and affordable for lower-income consumers.

Take Wish as an example. Our team invested in the company and it IPOed recently. One of the key ingredients of this success is unbundling: Offline, shopping experience, products and delivery are of similar quality; they are good, bad and ugly together. Wish unbundles this trichotomy. It offers a best-in-class, gamified online shopping experience with cheap products shipped long and far from Asia. Scrolling through the app, one struggles to find many products with double digit price tags. Exciting pictures of seemingly super cool gadgets abound instead—and so do promotions by brightly animated wheel of fortune and buzzing emails. A less shiny delivery and product experience are hidden in the background.

In addition to unbundling, we may offer existing products or services at smaller increments. We thus lower the entry price for a certain product category and make products accessible for lower-income customers.

One potent example of this mechanism is Philippine telco provider Smart. The company attracted lower-income consumers by offering a pricing plan that significantly lowered the denominations of its services. The plan allowed customers to reload minutes on their phones with very small amounts starting around \$0.03. Additionally, Smart introduced over-the-air recharge technology. The new pricing plans have been a huge success for Smart, and even increased the company's profit margins. (Anderson & Markides 2007)

- Software allows for better price discrimination. Consequently, lower-income products cannibalize higher-income offerings less.

The Internet allows sellers to fully individualize their pricing — at scale. They can personally know masses of shoppers and show each of their customers a different price according to their willingness to pay — as long as profits exceed zero. To the extent that the parties receiving different prices for the same product don't know that they have been treated differently, companies do not have to fear that lowering the price for some will force them to lower the price for all. They can sell the same product at lower margins to lower-income consumers and at higher-margins to higher-income consumers. That way, they not only maximize their profits, but serve lower-income consumers — sometimes for the first time.

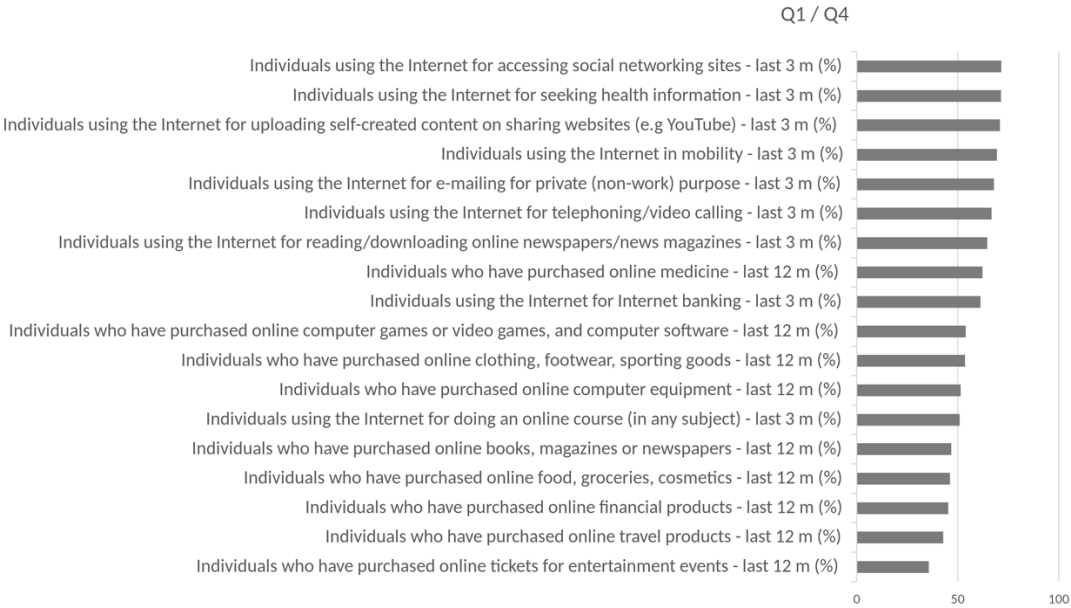
Of course, the mechanism of price discrimination as described above is highly idealized. In practice it faces high regulatory, moral and procedural hurdles. Nevertheless, the economic incentives it provides are potent. And we expect it to gain traction in the years ahead.

The Opportunity

The opportunity spans *multiple online categories*

The Lower-Income Online Opportunity is strongest in health & wellbeing (incl. food), communication, information, finance, entertainment, mobility and clothing.

For some indicators of Internet access, usage and consumption, lower-income consumers are closer to their higher-income peers than for others. To zoom into this intuition, we calculate dots for each category; we do so by dividing the first-income-quartile internet penetration by its fourth-income-quartile counterpart. The graphic that results shows a range from barely 40% to more than 70%. In other words, lower-income consumers fall far short of higher-income values for all categories – but for some more than others.



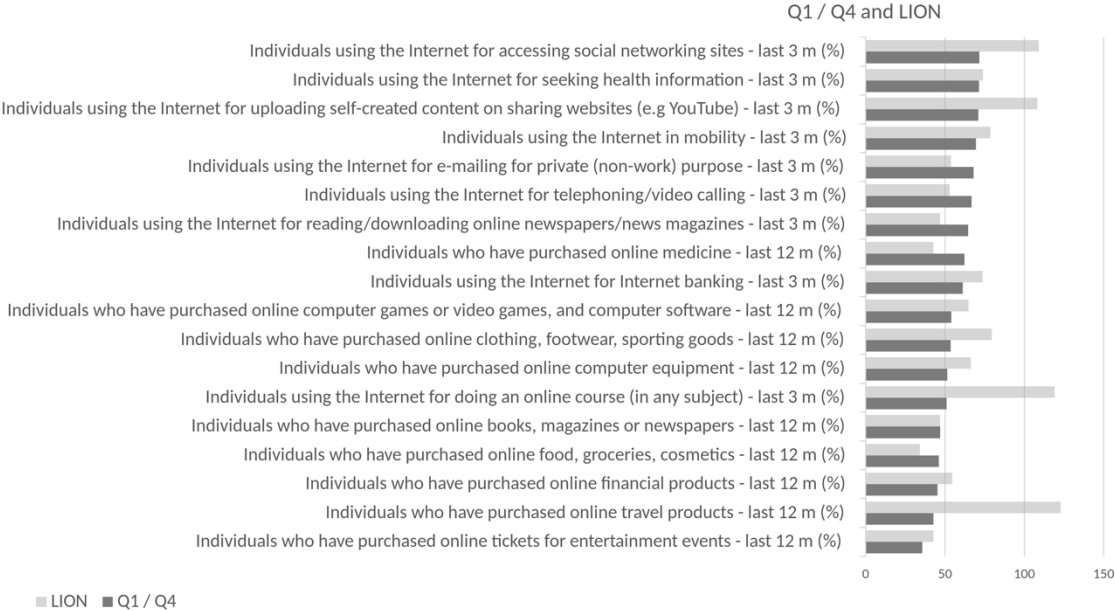
Source and details see above. Data for EU 28.

By itself, the displayed Q1 / Q4 ratio cannot indicate how well lower-income households are served online. For lower-income consumers allocate their budget quite differently than higher-income consumers do, and a lower lower-income share of online purchase or usage may be due to a generally (offline + online) lower share. Dropping Q1 / Q4 and simply setting online and offline shares in relation does not suffice as a remedy either. For then, if lower-income consumers purchase or use an indicator less online than they do offline, we do not know which part of this shortfall comes from this

category being underserved online across income groups and which part of it is specific to the lower-income demographic.

The Lower-Income Online Metric LION controls both for a generally lower (offline + online) lower-income purchase or usage and a general (lower-income + higher-income) underserving online. It sets Q1 / Q4 in relation with the total expenditure fraction (TEF) – a measure of relative lower- to higher-income budget shares spent both offline and online. For both Q1 / Q4 and LION higher values indicate lower opportunity.

The following graphic shows that LION adjusts our opportunity estimate downward for most indicators. We prefer the metric’s conservatism and inclusion of additional factors over the simplistic exuberance of Q1 / Q4.



Source and details see above.

Based on LION values we group the Lower-Income Online Opportunity into four categories:

Tremendous	Very High	High	Low
Individuals using the Internet for reading/downloading online newspapers/news magazines - last 3 m (%)	Individuals using the Internet for telephoning/video calling - last 3 m (%)	Individuals using the Internet in mobility - last 3 m (%)	Individuals using the Internet for uploading self-created content on sharing websites (e.g YouTube) - last 3 m (%)
Individuals who have purchased online books, magazines or newspapers - last 12 m (%)	Individuals who have purchased online computer equipment - last 12 m (%)	Individuals using the Internet for Internet banking - last 3 m (%)	Individuals using the Internet for doing an online course (in any subject) - last 3 m (%)
Individuals who have purchased online food, groceries, cosmetics - last 12 m (%)	Individuals using the Internet for e-mailing for private (non-work) purpose - last 3 m (%)	Individuals who have purchased online clothing, footwear, sporting goods - last 12 m (%)	Individuals using the Internet for accessing social networking sites - last 3 m (%)
Individuals who have purchased online medicine - last 12 m (%)	Individuals who have purchased online computer games or video games, and computer software - last 12 m (%)	Individuals using the Internet for seeking health information - last 3 m (%)	Individuals who have purchased online travel products - last 12 m (%)
Individuals who have purchased online tickets for entertainment events - last 12 m (%)	Individuals who have purchased online financial products - last 12 m (%)		

New Work and Parallel Social Realities are adjacent opportunities

New Work solutions will raise the wages of the lower-income demographic by remedying the under-utilization of its skills. And Parallel Social Realities will provide virtual worlds in which lower-income needs are better satisfied, because they do not require costly material consumption and are not tied to a high real-world status or identity.

New Work

Since 1980, lower- and middle incomes in high-income countries have stagnated relative to the incomes of the global elite and middle class (Alvaredo et al. 2018). The middle class of high-income countries will come under further pressure as technological change accelerates and machines start to outcompete humans.

As the following figure shows, the skills of lower-income individuals are increasingly under-utilized. From 1995 to 1997, the lowest quintile of German households worked 49.88% of the hours of the highest quintile. Twenty years later, the lowest quintile only worked 40.98% of the highest quintile; the bottom-quintile position had eroded by 20.3%, while the top-quintile position only saw a slight decrease of 3%.



Source: SOEP v30 (2015). Gross annual working hours are based on the working hours of all economically active individuals and include paid holidays, sick days and statutory public holidays. Incomes grouped by net disposable income in the preceding year.

To boost lower-income wages, we must remedy the under-utilization of lower-income skills. To do so, we either

- Raise skills to levels competitive with machines

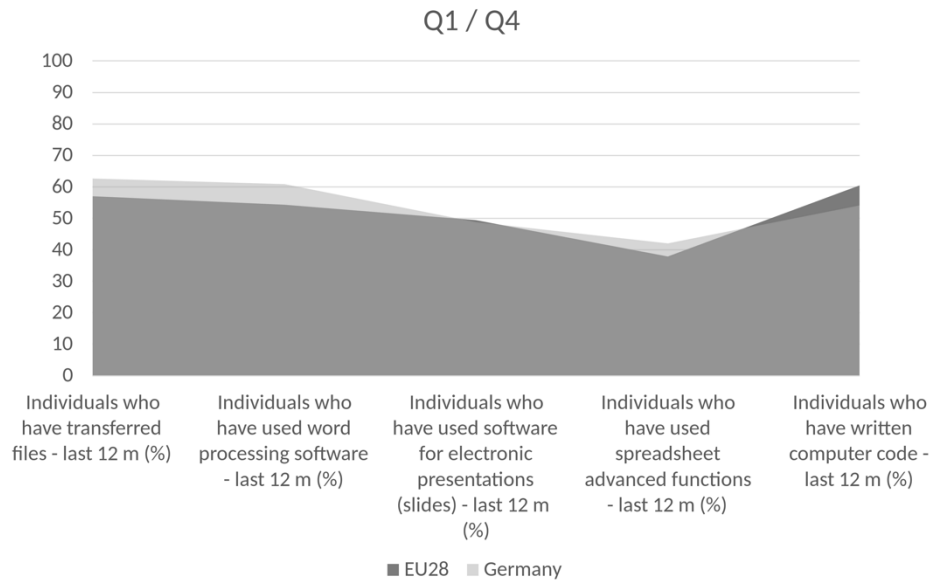
As technologies accelerate, they become better replacements for humans at ever more complex tasks. Not only do they produce goods and services superhumanly cheap, but also at superhuman qualities. To survive a competition so fierce, we must either

- Evade our competitors. That is, acquire skills difficult or impossible for machines to master.

To be human means to be social. The closer a skill is to this essence of humanity, the more a machine must become like us, must become human to master it. Social skills, thus, provide particular insulation against the onslaught of machines. But they cannot cushion the entire lower-income demographic. And where they are non-essential, many social functions will be transactionalized away.

- Or compete better. That is, acquire skills at least as fast as machines do.

The following figure reveals a disturbing pattern: The more complex a digital skill, the smaller the fraction of lower-income relative to higher-income penetration. Despite initial appearances, the relatively high ratio for writing computer code is not a silver lining – for it is merely stronger than its skill peers because higher-income individuals, too, slack in this domain. In the Germany of 2019, only 8.87% of Q4-income individuals had written computer code in the last 12 months. And in the EU28, this number stood at an equally dismal 8.11%.



Source: [OECD ICT Access and Usage by Households and Individuals](#). Q1 / Q4 divides the percentage of households with income in the first quartile by the percentage of households in the fourth quartile.

The lower-income demographic has a particular need for acquiring the skills of the digital age.

What R&D is to machines, education is to humans. Thus we must upgrade lower-income education. We may do so either by increasing the rate of skill transmission, or by increasing its duration. In English: we have to help lower-income people be better educated – throughout the entirety of their lives. We have to technologize teaching, align incentives. Notably, developers have the full property rights to the upgrades they achieve in their products, but teachers do not participate in the learning of their students – apart from a flat fee and some warm glow of association. The result: many promising students do not receive the education they deserve because teachers do not find their entrepreneurial sense tickled to allocate their resources more efficiently, to maximize the return on their time. But change is in the air and Code Camps are in their vanguard. Many of them charge a fraction of their students’ income. They acquire education equity; with incentives aligned perfectly, outcomes skyrocket.

- Enable the utilization of existing human skills

Second, the utilization of existing lower-income skills. Surprisingly, the future of work for lower-income individuals is particularly promising here. For accelerating technological change weakens what has been holding back the full utilization of lower-income skills: archaic gatekeepers (credentials, networking / nepotism, and cultural / language barriers).

Before an employer hires an employee, or two entrepreneurs agree to collaborate, both parties need to meet and predict the success of their joint venture. They assess each other's skills and – efficient as they are – take shortcuts. They rely on archaic credentials: diplomas, grades and certificates; recommendations by trusted third parties (referrals by their own respective networks or previous collaborators / customers). They rely on conversations / interviews and gut feelings.

Oftentimes, lower-income people do not fit into the boxes of these shortcuts. U.S. firms do not recognize the degrees of Cuban arbitration lawyers, forcing them to work as cashiers in Miami. Sales-people charismatic in Polish have trouble finding a sales job in Germany due to the language barrier. Children born to lower-income parents have a harder time accessing the networks in which internships and jobs reside.

As processing power accelerates, shortcuts in hiring or partnering will become less and less relevant. For better processing means that more information can be taken into account. The collaboration may even be tested at scale and zero marginal cost. Then organizations may find that lower-income people can do the job even if they do not fit into the boxes of their archaic credentials.

In addition, more transparent markets for all kinds of tasks and skills will enable everyone to monetize all of their skills. As the lower-income demographic has more time today (see above), it stands to particularly benefit from this trend.

While accelerating technological change lowers the wage of or unemploys low-skill workers, it also reduces the prices by which they can satisfy their needs. This linkage is important: if prices drop faster than wages, the need to up- and / or re-skill evaporates. We

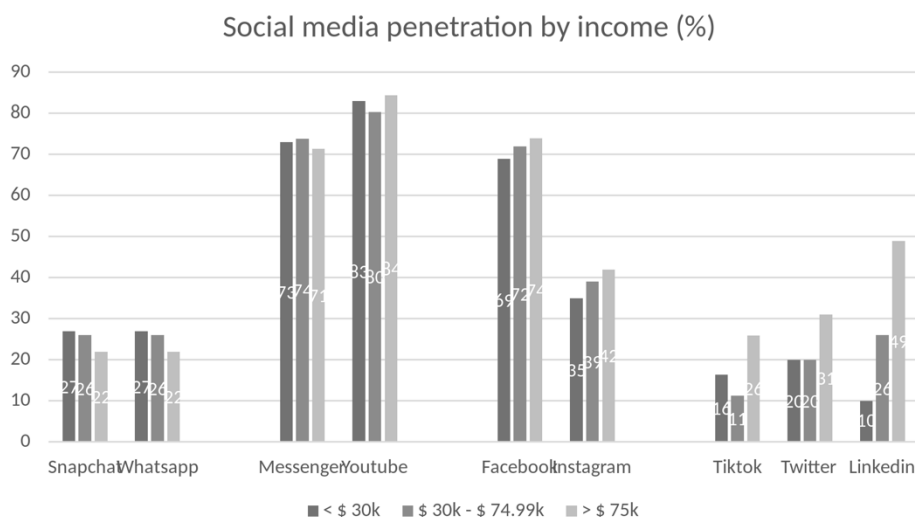
keep this truth in mind when we seek to identify particularly promising areas for disrupting education.

- Parallel Social Realities

Virtual worlds offer a particularly promising wage-to-price ratio. For the further the satisfaction of needs is removed from the consumption of actual material resources, the cheaper it becomes. Consequently, those who have been left behind by automation and AI, as well as deserted by their governments, can and will find refuge in parallel social realities (PSRs). Here they can connect and exchange with like-minded people – independently of socio-economic constraints.

The inhabitants of virtual worlds all build identities that accumulate status. But the extent to which these identities are removed from the identities held in the “real” world varies from PSR to PSR. We expect virtual worlds that allow virtual identity and status to uncouple from physical identity and status to fare particularly well in attracting lower-income users.

The following figure provides data in support of this hypothesis. In the U.S., Snapchat and WhatsApp penetration falls as income rises while Facebook, Instagram, Tiktok and Twitter penetration rises.



Virtual worlds that allow virtual identity and status to uncouple from physical identity and status fare particularly well in attracting lower-income users. Source: BusinessofApps. U.S. data. Data difficult to obtain for fortnite, twitch, discord, reddit, telegram.

Facebook Messenger, Snapchat and WhatsApp let users build their identity with little relation to reality. On Snapchat, the success of cute bunny-ear filters, artsy drawings, cheeky postures and witty word snippets does not depend on income. Neither does the popularity of funny GIFs, links and messages on WhatsApp and Facebook Messenger. From a pure identity and status perspective, Facebook Messenger should have WhatsApp's income distribution, but likely looks flattened due to spillover effects from Facebook – most Facebook users are also Facebook messenger users.

On Facebook and Instagram, by contrast, users showcase their real-world lives. Here, lower-income consumers simply cannot compete with photos taken in luxuriously expensive locations. Similarly, Twitter is a place for opinionated self-staging of thought leaders in positions of power. And LinkedIn is a place of positional career bragging. On both dimensions, lower-income users feel left behind.

Tiktok as a case is curious. From an identity and status perspective it should have a Snapchat income distribution. For Tiktok users have even more powerful tools to uncouple their digital content from uncompetitive physical realities. In addition, the Tiktok aesthetic as such is decidedly accessible.(e.g. [Lanigan 2019](#)) Yet, Tiktok's income demographic looks much more like Twitter's. The reason is simple: the income demographic captures only U.S. adult users of the platform and most Tiktok users are not yet of age. In June 2019, about 50% of daily active users in the United States were younger than 14 – and 40% in Germany. ([Zhong & Frenkel 2020](#)) In short, we lack the data to certify what income groups currently dominate and will remain dominant on Tiktok.

Admittedly, the logic of accelerating technological change will force human-machine competition into the virtual sphere as well. Whatever it is that people do online, machines will do better one day. It is for this reason that we focus on evading machine competition via the social aspect of these parallel realities. We humans are political beings; it is our social features that define us. By moving the competition onto a field whose rules it is to be human, we have the chance to hold out longer. In fact, it is on this field that we will hold out the longest.

About Cusp Capital

Cusp Capital is a venture capital firm focused on European software and technology. The fund invests in early-stage companies on the cusp of redefining their industries by channeling new socioeconomic and technological paradigms. The Cusp Capital team members are long-time contributors to the technology ecosystem. Over the last decade, they have invested more than € 400m in companies such as Zalando, Delivery Hero, Klarna, Scalable Capital, and data Artisans.

Learn more about Cusp Capital and its current focus themes at cuspcapital.com and connect with the team on [LinkedIn](#).